Listing of the claims:

1. (previously amended) A method for determining a mechanical axis of a femur using a computer aided surgery system having an output device for displaying said mechanical axis, the method comprising:

providing a position sensing system having a tracking device capable of registering instantaneous position readings and attaching said tracking device to said femur;

locating a center of rotation of a femoral head of said femur by moving a proximal end of said femur to a first static position, acquiring a fixed reading of said first static position, repeating said moving and said acquiring for a plurality of static positions; and locating said centre by determining a central point of a pattern formed by said plurality of static positions;

digitizing an entrance point of said mechanical axis at a substantially central position of said proximal end of said femur;

joining a line between said entrance point and said center of rotation to form said mechanical axis; and

displaying said mechanical axis on an output device without reference to an image of said femur acquired pre-operatively or intra-operatively using a medical imaging device.

2. (original) A method as claimed in claim 1, wherein said position sensing system automatically registers said instantaneous position readings periodically and said acquiring a fixed reading comprises taking an average value of a plurality of said instantaneous position readings to determine said static position.

3. (original) A method as claimed in claim 1, wherein said position sensing system responds to user input to register said instantaneous position readings and said acquiring a fixed reading comprises enabling said position sensing system to register a single instantaneous position reading.

4. (original) A method as claimed in claim 1, wherein said pattern formed by said plurality of static positions is a conical pattern.

5.-6. (cancelled)

7. (original) A method as claimed in claim 1, wherein said acquiring a fixed reading comprises determining a position of said proximal end relative to a reference.

8. (original) A method as claimed in claim 7, wherein said reference is a fixed reference placed on a pelvis bone adjacent to said femur.

9. (original) A method as claimed in claim 1, wherein said repeating said moving comprises waiting for a signal from an acquisition system that said fixed reading has been acquired before moving to a next static position.

10. (original) A method as claimed in claim 9, wherein said signal is an audio sound.

11. (original) A method as claimed in claim 1, wherein said repeating said moving comprises moving said proximal end at least 20 mm to a next static position.

12. (original) A method as claimed in claim 1, wherein said digitizing comprises applying an instrument to a surface of said bone such that a point and a normal axis to said point are determined.

13. (original) A method as claimed in claim 1, wherein said substantially central position is determined visually.

14. (original) A method as claimed in claim 1, wherein said bone is a femur, said first end is a femoral head of said femur, and said substantially central position is determined by locating an inter-condylar notch.

15. (original) A method as claimed in claim 14, wherein said inter-condylar notch is located by digitizing a medial and a lateral epicondyle at said second end of said femur, forming an epicondylar axis, and determining a center of said epicondylar axis.

16. (previously presented) A system for determining a mechanical axis of a femur, the system comprising:

a position sensing system having a tracking device adapted to register instantaneous position readings of said femur;

an acquisition module adapted to acquire data from said position sensing system and store fixed readings of a plurality of static positions of a proximal end of said femur and a digitized reading of an entrance point of said mechanical axis;

a computing module adapted to locate a center of a femoral head of said femur by determining a central point of a pattern formed by said plurality of static positions and joining a line between said entrance point and said center of a femoral head, thereby representing said mechanical axis; and

an output device adapted to display said mechanical axis, wherein said mechanical axis is determined and displayed on said output device without reference to an image of said femur acquired pre-operatively or intra-operatively using a medical imaging device.

17. (previously presented) A system as claimed in claim 16, wherein said position sensing system automatically registers said instantaneous position readings periodically, and said acquisition module is adapted to take an average value of a plurality of said instantaneous position readings to determine said static positions.

18. (previously presented) A system as claimed in claim 16, wherein said position sensing system responds to user input to register said instantaneous position readings.

19. (previously presented) A system as claimed in claim 16, wherein said acquisition module determines a position of said proximal end relative to a reference.

20. (previously presented) A system as claimed in claim 19, wherein said reference is a fixed reference placed on a pelvis bone adjacent to said femur.

21. (previously presented) A system as claimed in claim 16, wherein said acquisition module provides a signal that said fixed readings have been acquired in between each acquisition.

22. (previously presented) A system as claimed in claim 21, wherein said signal is an audio sound.

23. (previously presented) A system as claimed in claim 16, wherein said digitized reading of an entrance point is a point and a normal axis to said point.

24. – 32. (cancelled)